NOTES:

1. DOES NOT INCLUDE APPROXIMATELY 300,000 ac-ft/yr DELIVERY TO COACHELLA CANAL.
2. INCLUDES APPROXIMATELY 3,400 ac-ft/yr DELIVERY TO IID USERS VIA THE AAC UPSTREAM OF THE MESA LATERAL 5 AND 4,100 ac-ft/yr DELIVERY TO IID USERS VIA THE COACHELLA CANAL.
3. THE RAINFALL (RUNOFF AND DEEP PERCOLATION) COMPONENT RESULTS FROM NON EFFECTIVE PRECIPITATION AND IS CALCULATED AS A CLOSURE TERM FOR THE DRAINAGE WATER BALANCE.

SIMULATED MEAN ANNUAL FLOWS FOR TIME PERIOD 1987-1998 IN THOUSANDS OF ACRE FEET.

WATER BALANCE DATA ARE APPROXIMATE AND MINOR VARIATIONS IN THE MODELED FLOW DATA ARE EXPECTED.

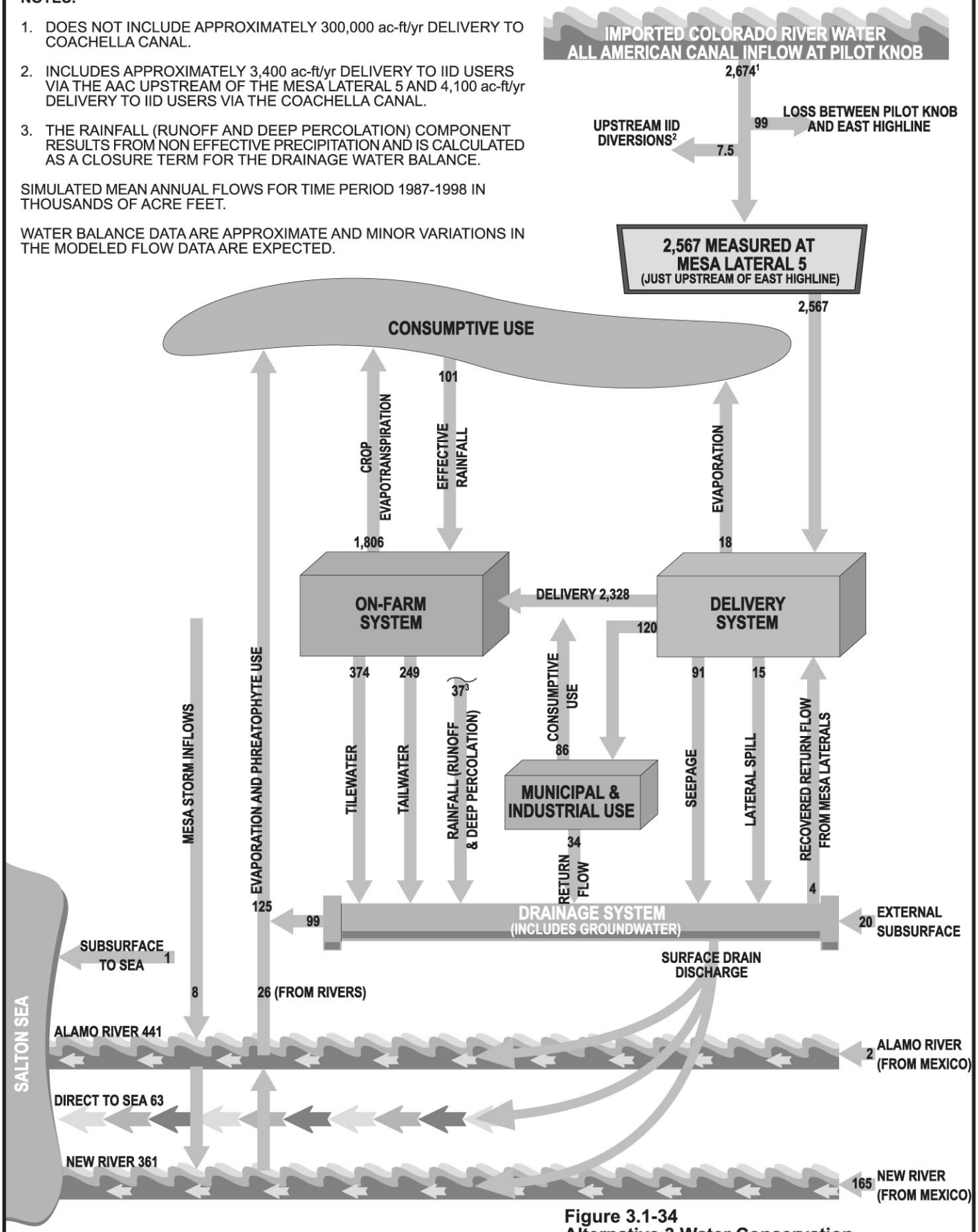

Figure 3.1-34
Alternative 3 Water Conservation and Transfer of up to 230 KAFY (130 KAFY On-farm, 100 KAFY System) Average Overall Water Balance
IID Water Conservation and Transfer Project Final EIR/EIS

The data in this figure does not reflect implementation of the Salton Sea Habitat Conservation Strategy

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Collective Drains Discharging to the New and Alamo Rivers. Under Alternative 3, the amount of drain (tile, tail, seepage, and spillage) water that is collected by and discharged from the IID drainage system to the New and Alamo Rivers would be reduced approximately 24 percent and 23 percent, respectively, from the mean annual volumes predicted for the Baseline. The primary impacts associated with the reduction of flow in the IID drains that discharge to the New and Alamo Rivers are associated with water quality in the drains. No other impacts to these drains are anticipated.

Alamo River. The amount of water discharged from the Alamo River to the Salton Sea would be reduced by approximately 25 percent, from a mean annual volume of 576 KAFY predicted under the Baseline to approximately 441 KAFY. As previously noted, the volume of water within the Alamo River would mainly consist of IID drainage. The primary impacts resulting from the reduction of flow in the Alamo River are related to water quality in the river, and impacts to water quality and quantity in the Salton Sea. No other impacts associated with the decreased flow in the river are anticipated.

New River. As previously noted, the average annual flow volume of the New River at the International Boundary is estimated at approximately 165 KAFY. This flow volume may be affected by water demand and discharges in Mexico, and has changed dramatically over the period of record. Future changes in flow volume across the International Boundary could occur; however, this flow would not be affected under Alternative 3. Model results for IID drainage indicate that, when combined with the current flow from Mexico, the mean annual flow in the New River at the outlet to the Salton Sea would be approximately 361 KAFY.

This represents a reduction of approximately 16 percent from the predicted flow of 431 KAFY under the Baseline. The primary impacts related to the reduction of flow in the New River are associated with water quality in the river, and impacts to water quality and quantity in the Salton Sea. No other impacts associated with the decreased flow in the river are anticipated.

Surface Drain Discharge Directly to the Salton Sea. Similar to the reductions to New and Alamo Rivers, implementation of Alternative 3 would reduce the amount of water discharged directly from IID drains to the Salton Sea by approximately 31.5 percent, from 92 KAFY predicted under the Baseline to approximately 63 KAFY. The primary impacts from the reduction of flow in the surface drains are related to water quality in the drains and impacts to water quality and quantity in the Salton Sea.

Water Quality in New River at the International Boundary. Model results indicate that water quality in the New River at the International Boundary are unaffected by the Proposed Project and Alternatives, and TDS, TSS, and selenium concentrations are the same for the Baseline, as well as for the Proposed Project and Alternatives (see Table 3.1-16).

Surface Water Quality

Note: All water quality values presented under Alternative 3 were derived using the IIDSS model with the assumption that on-farm and/or water delivery system based measures would be implemented to conserve water for transfer. Water quality results assuming fallowing is used to generate water for transfer are presented under Alternative 4.

Impact A3-WQ-2: Increased selenium concentration in IID surface drain discharges to the Alamo River. Alternative 3 model results indicate that the annual average concentration of selenium in the surface drain discharge to the Alamo River would increase to 8.88 µg/L, which is above the significance criterion. However, model results indicate that TDS concentrations are 3,501 mg/L, which is below the significance criterion. TSS concentrations are 225 mg/L, which is lower than the Baseline but still above the significance criterion. In summary, TSS and selenium concentrations increase compared to the Baseline, and TSS concentrations decrease (see Table 3.1-15).

Impacts to the Alamo River associated with selenium are similar to those described under the Proposed Project; that is, selenium concentrations in surface drain water discharge to the Alamo River represent significant and unavoidable impacts to water quality. It should be noted that average Baseline selenium concentrations in the Alamo River drains are also above the significance criterion. (Significant and unavoidable impact.)

Mitigation Measure A3-WQ-2: No reasonable mitigation is available to reduce the concentration of selenium in the drains. The HCP IID Water Service Area Portion includes habitat replacement to mitigate for the biological impacts resulting from the increased selenium; however, the selenium concentration itself would not be reduced by the HCP. (Significant and unavoidable impact.)

Impact A3-WQ-3: Reduction in Total Suspended Solids concentrations in IID surface drains discharging to the Alamo River. Impacts associated with TSS in surface drain discharge to the Alamo River under Alternative 3 are considered beneficial to river water quality because TSS concentrations are lower relative to the Baseline. The impacts associated with TSS concentrations are similar to those described under the Proposed Project; that is, TSS levels decrease with this Alternative, which is a beneficial impact. (Beneficial impact).

Impact A3-WQ-4: Increased selenium concentration in the Alamo River at the Outlet to the Salton Sea: Model results indicate that selenium concentrations increase to 7.39 µg/L under Alternative 3, which is above the significance criterion. However, average TDS concentrations, 2,917 mg/L, are below the significance criterion. TSS concentrations of 242 mg/L are lower than concentrations under the Baseline but remain above the significance criterion of 200 mg/L. In comparison to the Baseline, TDS and selenium concentrations increase, and TSS concentrations decrease (see Table 3.1-15).

Impacts associated with selenium are similar to those described under the Proposed Project; that is, selenium concentrations in the Alamo River that are above the significance criterion represent significant and unavoidable impacts to water quality. However, it should be noted that average Baseline selenium concentrations in the Alamo River are also above the significance criterion. (Significant and unavoidable impact.)

Mitigation A3-WQ-4: None available. (Significant and unavoidable impact.)

Impact A3-WQ-5: Increase in selenium concentration in the IID surface drain discharge to the New River. Model results indicate that the average concentration of TDS in the surface drain discharge to the New River is 3,134 mg/L, which is below the significance criterion. However, the average selenium concentration increases to 7.90 µg/L, which is above the significance criterion. In comparison to the Baseline, TDS and selenium concentrations are higher, and TSS concentrations (264 mg/L) are lower (see Table 3.1-16).

Impacts associated with selenium are similar to those described under the Proposed Project; that is, selenium concentrations in the New River that are above the significance criterion represent significant and unavoidable impacts to water quality. However, it should be noted that average Baseline selenium concentrations in the drains to the New River are also above the significance criteria. (Significant and unavoidable impact.)

Mitigation Measure A3-WQ-5: See Mitigation Measure A3-WQ-2.

Impact A3-WQ-6: Change in COC concentrations in the New River at the Outlet to the Salton Sea. COC concentrations remain below significance criteria in the New River at the outlet to the Salton Sea. Average concentrations of TDS and selenium in the New River at the outlet to the Salton Sea are below their respective significance criteria, with TDS at 2,929 mg/L and selenium at 3.62 µg/L. In comparison to the Baseline, TDS and selenium concentrations are higher, and concentrations of TSS (207 mg/L) are lower (see Table 3.1-16). (Less than significant impact.)

Impact A3-WQ-7: Increase in selenium concentrations in the IID surface drains discharging directly to the Salton Sea. Model results indicate that under Alternative 3, the average concentration of selenium in the surface drains that discharge directly to the Salton Sea increases to 6.40 µg/L. This concentration is above the selenium significance criterion of 5.0 µg/L. The TDS concentration is 2,525 mg/L. TSS concentrations are 148 mg/L. In comparison, concentrations of TDS, TSS, and selenium are all higher than those modeled under the Baseline (see Table 3.1-17). The selenium concentrations in the IID surface drain discharge under Alternative 3 represent significant and unavoidable impacts to the Salton Sea. (Significant and unavoidable impact.)

Mitigation Measure A3-WQ-7: See Mitigation Measure A3-WQ-2.

Impact A3-WQ-8: Potential effects to Imperial Valley groundwater hydrology. Similar to the Proposed Project, Alternative 3 is not expected to impact groundwater resources in the IID. Therefore, impacts to groundwater resources and the beneficial use of groundwater in the IID water service area are expected to be less than significant. (Less than significant impact.)

Salton Sea Habitat Conservation Strategy (HCP-SS)

Under the Salton Sea Portion of the HCP, mitigation water would be supplied to the Sea to maintain the salinity of the Sea below 60 ppt until 2030. As described in the Project Description, how mitigation water would be conveyed to the Salton Sea has not yet been specified.

As described in Section 2.2.6.7, the Salton Sea Habitat Conservation Strategy has been evaluated in this Final EIR/EIS with the assumption that mitigation water would be generated by fallowing within the IID water service area. Other sources of water could be used, but they have not been evaluated in this EIR/EIS.

Potentially, the mitigation water could be transported via drains and rivers in the Imperial Valley. In this case, flows in the rivers and drains used to convey the water could approach levels under the Baseline. Alternatively, mitigation water generated in the Imperial Valley could be conveyed to the Salton Sea through channels other than the drains and rivers in the Imperial Valley. In this case, flows in the drains and rivers in the Imperial Valley would be reduced relative to Alternative 3 without implementation of the HCP-SS component. When

mitigation water is no longer provided to the Salton Sea, flows would be the same as without implementation of the Salton Sea Habitat Conservation Strategy.

Implementation of the Salton Sea Habitat Conservation Strategy could affect water quality in the drains depending on the source of water used to provide mitigation water. If fallowing within the IID water service area is used to generate mitigation water, minor changes in water quality could occur. It is expected that fallowing to generate mitigation water would not change the tail and tile water percentages in the drains, and as a result, water quality would not change appreciably. This expectation was verified by making additional runs with the IIDSS model. Minor changes to water quality concentrations could occur in the New River because about one-third of the flow comes from Mexico and fallowing would reduce constituent mass loading. In addition, because of smaller flows in the canal system, there could be minor water quality changes in the canals and rivers because of changes in seepage losses and gains.

SALTON SEA

Water Conservation and Transfer

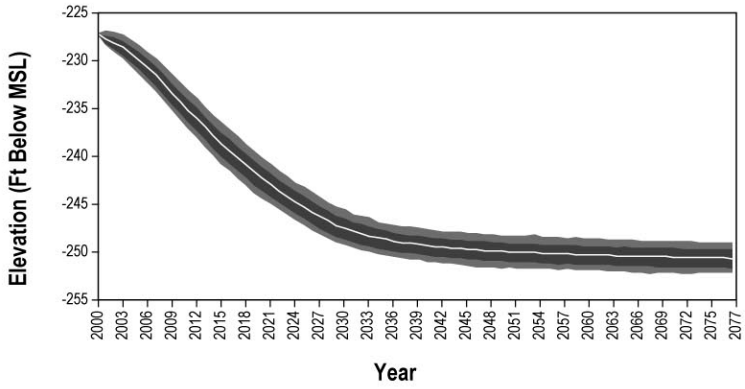
Water Quantity. According to model results generated by the IIDSS (see Appendix E), Alternative 3 is expected to reduce IID's discharge to the Salton Sea by approximately 21 percent, from roughly 1.1 MAFY under the Baseline to 866 KAFY (includes flow from Mexico). Over a 75-year period, modeling conducted by Reclamation indicates that the reduction in flow is expected to result in a drop in the surface of the Sea of roughly 19 feet, from its Baseline elevation of approximately –228 feet msl to as much as –247 feet msl (using only on-farm and/or water delivery system measures to produce water for transfer) or to –239 feet msl if fallowing is used to generate water for transfer (Salton Sea Accounting Model 2001 data; see Figure 3.1-35).

In addition, Reclamation's model predicts that over the life of Alternative 3, the reduction of flow will reduce the surface area of the Sea by 4 percent (approximately 86 square miles), from the present area of approximately 233,000 acres to 178,000 acres. By far, the greatest reductions are expected to occur between the time of the initiation of transfer and the year 2030 (see Figure 3.1-35). In comparison, under the Baseline the mean elevation of the Sea is expected to drop about 7 feet to –235 feet msl over the same 75-year period. However, with implementation of the Salton Sea Habitat Conservation strategy in concert with Alternative 3, the elevation of the Sea would be maintained at Baseline elevation to the year 2035 and then reach an elevation between –239 feet msl and –246 feet msl at the end of the project term (2077), depending upon the method used to conserve water for transfer.

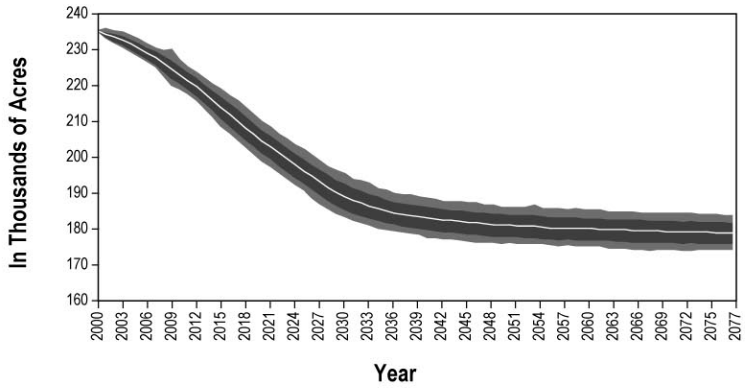
See also the additional notes under the Proposed Project impact to the Salton Sea regarding impacts to other resources and relationship to the Salton Sea Restoration Project.

Water Quality. As previously mentioned, a finding of significant impact to the Sea, based on a regulatory standard for TSS and salinity, cannot be made at this time. However, to provide background for potential secondary impacts to biological resources in the Salton Sea, a discussion of the predicted change in salinity of the Sea is presented below. Further analysis of the impacts that elevated salinity levels could have on the biological resources of the Sea is included in Section 3.2, Biological Resources.

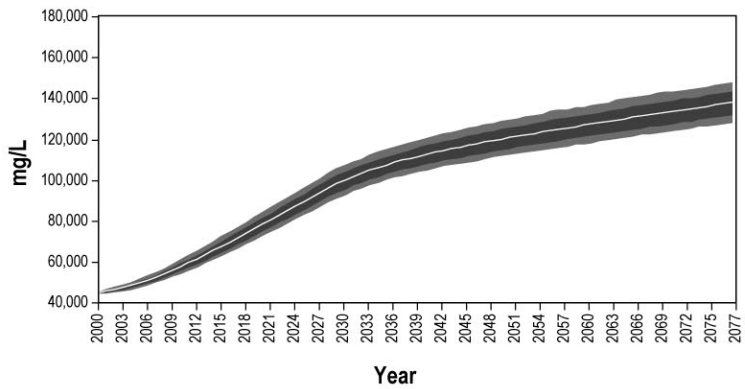
Surface Elevation - an elevation between –239 and –246 at the end of the project term, 2077



Surface Area



Salinity



Legend:

- Mean
- +1 Standard Deviation, -1 Standard Deviation
- +95 Percentile, -5 Percentile

Notes:

Mean: Mean of all traces
95 Percentile: 95 percent of all model traces resulted in values less than or equal to the indicated values
5 Percentile: 5 percent of all model traces resulted in values less than or equal to the indicated values
-1 Standard Deviation: Values representing one standard deviation below the mean
+1 Standard Deviation: Values representing one standard deviation above the mean

Source: U.S. Bureau of Reclamation Salton Sea Accounting Model, December 2001.

The data in this figure does not reflect implementation of the Salton Sea Habitat Conservation Strategy

Figure 3.1-35
USBR Model Results:
Alternative 3 Graphs of the Salton Sea

Reclamation's Salton Sea Accounting Model predicts that the reduced inflows under the Proposed Project will ultimately result in the salinity of the Sea rising from its present concentration of approximately 45,000 mg/L TDS to over 60,000 mg/L TDS by the year 2012. And, by the year 2077, the Salton Sea Accounting Model predicts that salinity of the Sea will be as high as 138,000 mg/L TDS. In comparison, the Salton Sea Accounting Model results indicate that under future Baseline conditions, the salinity of the Sea will reach 60,000 mg/L TDS by 2023, and ultimately will rise as high as 86,000 mg/L TDS by the year 2077 (see Figure 3.1-35). With implementation of the Salton Sea Habitat Conservation Strategy, the predicted TDS level for Alternative 3 is anticipated to be 139,000 mg/L (see Figure 3.1-29a). A bar chart comparing the future Baseline TDS concentrations to predicted TDS concentrations for the Proposed Project and Alternatives is presented in Figure 3.1-29.

Impact A3-WQ-9: Potential change in COC concentrations of the Salton Sea water column. Similar to the Proposed Project, it is unlikely that Alternative 3 would result in an increase in selenium concentrations in the Sea to levels equal to or greater than the 5.0 µg/L level stipulated in the significance criteria. (Less than significant impact.)

Impact A3-WQ-10: Potential change in COC deposition in Salton Sea sediments. Quantitative data on how reductions in flow affect concentrations of herbicides and pesticides in sediment are not available. However, qualitative assumptions indicate that concentrations of herbicides and pesticides in sediment in the Salton Sea are expected to decrease under Alternative 3.

As discussed in the Existing Setting section (Section 3.1.3.3), herbicides and pesticides tend to concentrate in sediment. Therefore, the amount of TSS in water can be used as a gross indicator for making comparative estimates about herbicide and pesticide concentrations in sediment. In this respect, a reduction in herbicide and pesticide concentrations in sediment under Alternative 3 is expected because the mass input of TSS to the Sea (along with the total inflow of water) is expected to decrease relative to the Baseline. As a result, impacts to sediment quality from Alternative 3 are anticipated to be less than significant. (Less than significant impact.)

As previously noted, the Proposed Project has the potential to affect selenium concentrations in sediment in the Salton Sea. Selenium concentrations in sediment do not constitute an impact to water quality based on the water quality significance criteria. However, changes in selenium concentrations have the potential to affect biological resources in the Salton Sea. Further details on these potential impacts are presented in Section 3.2, Biological Resources.

Salton Sea Habitat Conservation Strategy (HCP-SS)

As described in Section 2.2.6.7, the Salton Sea Habitat Conservation Strategy has been evaluated in this Final EIR/EIS with the assumption that mitigation water would be generated by fallowing within the IID water service area. Other sources of water could be used but they have not been evaluated in this EIR/EIS.

With implementation of the Salton Sea Portion of the HCP, mitigation water would be provided to the Sea such that the salinity of the Sea would remain below 60 ppt until 2030. For approximately the first 30 years of the Project, inflow to the Sea would be greater than under the Baseline. After this period, inflow to the Sea would be reduced. Provision of

water to the Sea would maintain the surface elevation higher than would occur under the Baseline until 2030, after which the surface elevation would decline at a faster rate and to a greater degree than under the Baseline (see Figure 3.2-17b in Section 3.2.4.3).

Impact A3-HCP-SS-WQ-11: Reduced loading of COC to Salton Sea water and sediment. The Salton Sea Portion of the HCP is designed to avoid the impacts to biological resources from Project-related reductions in flow to the Sea. The quality of the water discharged to the Salton Sea under the Salton Sea Portion of the HCP would be similar to or improved relative to the water that is currently discharged to the Sea. Therefore, implementing this approach would not affect selenium concentrations in the Sea. Further, providing water to the Sea would slow the rate of salinization relative to the Baseline for the first 30 years of the Project. With the Salton Sea Portion of the HCP, the salinity of the Sea would be lower than under the Baseline until about 2030. Once mitigation water is no longer supplied to the Sea, the salinity is projected to increase beyond that expected under the Baseline (Figure 3.1-29a). There are no significance criteria that stipulate a specific federal or state standard for salinity in the Salton Sea. Thus, the changes in salinity under Alternative 3 with the HCP are a less than significant water quality impact.

3.1.4.7 Alternative 4 (A4): Water Conservation and Transfer of Up to 300 KAFY to SDCWA, CVWD, and/or MWD (Fallowing As Exclusive Conservation Measure)

LOWER COLORADO RIVER

Water Conservation and Transfer

Similar to the Proposed Project, Alternative 4 includes the diversion of up to 300 KAFY at Parker Dam to the CRA, and the transfer through the CRA of up to 200 KAFY to the SDCWA service area, with an optional transfer of up to 100 KAFY to SDCWA, CVWD, and/or MWD over the course of up to 75 years. Alternative 4 does not include construction and operation of new or improvement of existing facilities in the LCR study area; therefore, no impacts to hydrology and water quality as a result of changes in construction and operations would occur in the LCR. The reduction in flow in the reach between Parker and Imperial dams of up to 300 KAFY has the potential to result in beneficial and less than significant impacts, as described below.

Water Quantity. Under Alternative 4, the impacts to surface water quantities in the LCR will be the same as those described for the Proposed Project. The potential change under Alternative 4 is anticipated to be within the future normal fluctuation of the river.

Impact A4-WQ-1: Effects on groundwater, LCR flows, and LCR water quality. Under Alternative 4, the impacts on river stage associated with the change of the diversion point of 300 KAFY will be the same as those described for the Proposed Project. Under Alternative 4, changes in groundwater hydrology and chemistry in aquifers that are hydraulically connected to the LCR would be the same as those predicted under the Proposed Project, less than significant.

Similar to the Proposed Project, the reduction of flow volume during a given season in the reach of the LCR between Parker and Imperial dams could beneficially impact sediment load in the LCR. Relative to Baseline, salinity concentrations are anticipated to continue to meet mandated objectives through salinity control projects; therefore, no impact to salinity in the LCR is anticipated. In addition, Alternative 4 is not expected to change water quality in the LCR because additional chemical constituents that could affect Baseline conditions are

not being introduced to the reach. Therefore, impacts to water quality in the LCR are anticipated to be less than significant. (Less than significant impact.)

IID WATER SERVICE AREA AND AAC

Water Conservation and Transfer

Surface Water Quantity

IID Irrigation Water Delivered Through the AAC. Alternative 4 would reduce water delivery to IID through the AAC by 300 KAFY plus adjustment for the IOP. The amount of water delivered to IID (as measured at Mesa Lateral 5) would be reduced approximately 11 percent from 2.8 MAFY under the Baseline to just under 2.5 MAFY (see Figure 3.1-36). Similar to the Proposed Project, there would be little change in water levels in the AAC and main irrigation delivery canal system because current water levels in the AAC, East Highline Canal, and Westside Main Canal are maintained as high as possible to maximize power generation from the hydropower facilities on these canals and to ensure efficient water delivery operations.

Collective Drains Discharging to the New and Alamo Rivers. Under Alternative 4, the amount of drain (tile, tail, seepage, and spillage) water that is collected by and discharged from the IID drainage system to the New and Alamo Rivers would be reduced approximately 11 percent and 10 percent, respectively, from the mean annual volumes predicted for the Baseline. The primary impacts associated with the reduction of flow in the IID drains that discharge to the New and Alamo Rivers are associated with water quality in the drains. No other impacts to these drains are anticipated.

Alamo River. The amount of water discharged from the Alamo River to the Salton Sea would be reduced by approximately 10 percent from a mean annual volume of 576 KAFY predicted under the Baseline, to approximately 517 KAFY. As previously noted, the volume of water within the Alamo River would mainly consist of IID drainage. The primary impacts resulting from the reduction of flow in the Alamo River are related to water quality in the river, and impacts to water quality and quantity in the Salton Sea. No other impacts associated with the decreased flow in the river are anticipated.

New River. As previously noted, the average annual flow volume of the New River at the International Boundary is estimated at approximately 165 KAFY. This flow volume may be affected by water demand and discharges in Mexico, and has changed dramatically over the period of record. Future changes in flow volume across the International Boundary could occur; however, this flow would not be affected under Alternative 4. Model results for IID drainage indicate that, when combined with the current flow from Mexico, the mean annual flow in the New River at the outlet to the Salton Sea would be approximately 399 KAFY.

This represents a reduction of approximately 7.4 percent from the predicted flow of 431 KAFY under the Baseline. The primary impacts related to the reduction of flow in the New River are associated with water quality in the river, and impacts to water quality and quantity in the Salton Sea. No other impacts associated with the decreased flow in the river are anticipated.

NOTES:

1. DOES NOT INCLUDE APPROXIMATELY 300,000 ac-ft/yr DELIVERY TO COACHELLA CANAL.
2. INCLUDES APPROXIMATELY 3,400 ac-ft/yr DELIVERY TO IID USERS VIA THE AAC UPSTREAM OF THE MESA LATERAL 5 AND 4,100 ac-ft/yr DELIVERY TO IID USERS VIA THE COACHELLA CANAL.
3. THE RAINFALL (RUNOFF AND DEEP PERCOLATION) COMPONENT RESULTS FROM NON EFFECTIVE PRECIPITATION AND IS CALCULATED AS A CLOSURE TERM FOR THE DRAINAGE WATER BALANCE.

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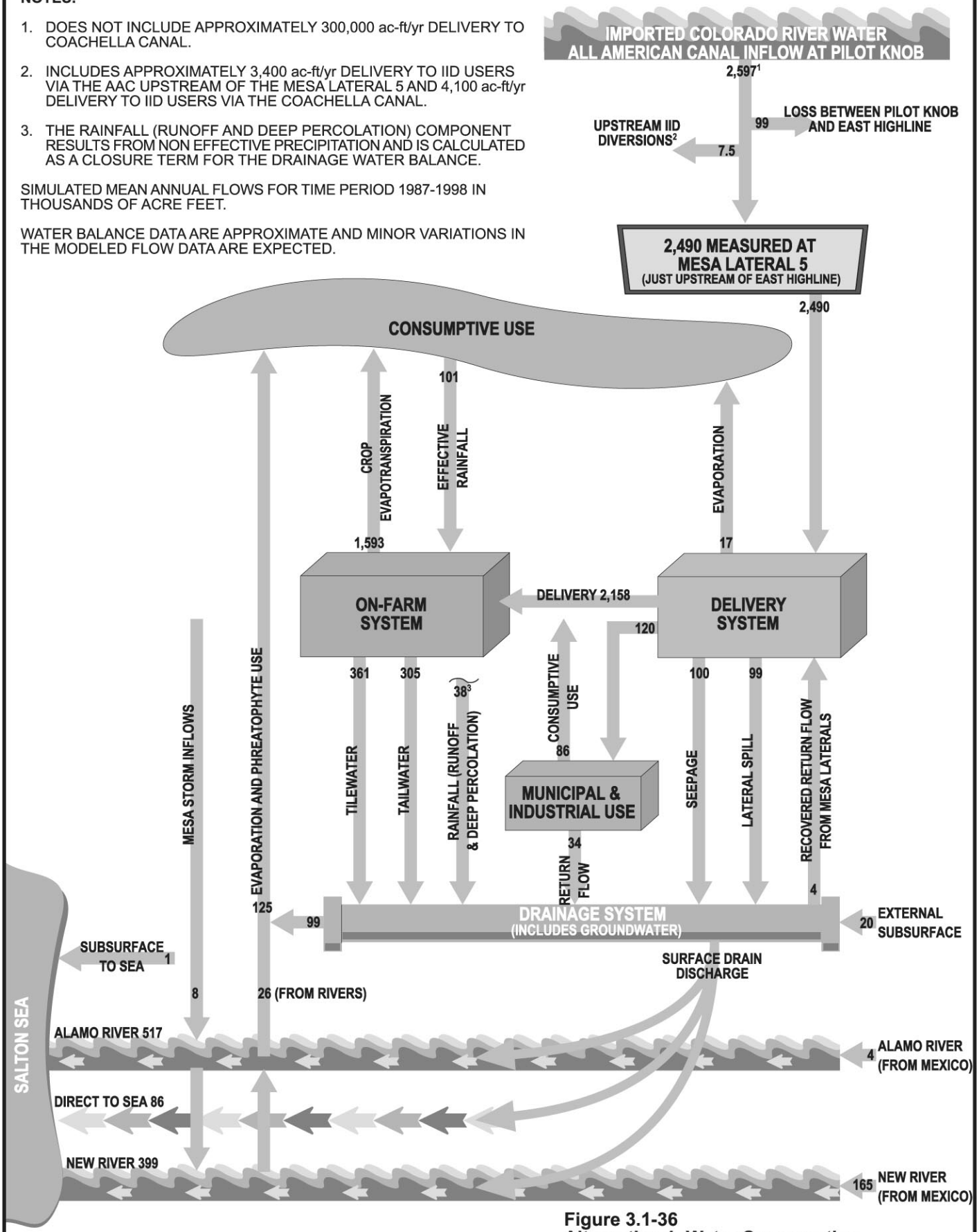

Figure 3.1-36
Alternative 4: Water Conservation and Transfer of Up To 300 KAFY (Fallowing as Exclusive Conservation Method) Average Overall Water Balance
IID Water Conservation and Transfer Project Final EIR/EIS

The data in this figure does not reflect implementation of the Salton Sea Habitat Conservation Strategy

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Surface Drain Discharge Directly to the Salton Sea. Similar to the reductions to the New and Alamo Rivers, implementation of Alternative 4 would reduce the amount of water discharged directly from IID drains to the Salton Sea. Specifically, the amount of water discharged from IID drains directly to the Salton Sea would be reduced approximately 6.5 percent, from 92 KAFY predicted under the Baseline to approximately 86 KAFY. The primary impacts from the reduction of flow in the surface drains are related to water quality in the drains and impacts to water quality and quantity in the Salton Sea (see Figure 3.1-36).

Water Quality in New River at the International Boundary. Model results indicate that water quality in the New River at the International Boundary is unaffected by the Proposed Project and Alternatives, and TDS, TSS, and selenium concentrations are the same for the Baseline, as well as for the Proposed Project and Alternatives (see Table 3.1-16).

Surface Water Quality

Impact A4-WQ-2: Decreased selenium concentration in IID surface drain discharges to the Alamo River. Alternative 4 model results indicate that the annual average concentration of selenium in the surface drain discharge to the Alamo River would decrease to 6.10 µg/L compared to 6.32 µg/L under the Baseline but would remain above the significance criterion. Model results indicate that TDS concentrations decrease to 2,403 mg/L (below the significance criterion). TSS concentrations could decrease slightly to 247 mg/L but would remain above the significance criterion. With Alternative 4, TDS, TSS, and selenium concentrations are all lower than those modeled under the Baseline (see Table 3.1-15).

Impacts to the Alamo River associated with selenium are reduced when compared to those described under the Proposed Project; that is, selenium concentrations in surface drain water at the point of discharge to the Alamo River represent an improvement in drain water quality, which would be considered a beneficial impact. It should be noted that average Alternative 4 selenium concentrations in the Alamo River drains would remain above the significance criterion although these concentrations are improved in comparison to – Baseline concentrations. (Beneficial impact.)

Impact A4-WQ-3: Minor Reduction in Total Suspended Solids concentration in IID surface drains discharging to the Alamo River. Alternative 4 could have minor beneficial effects on TSS in surface drain discharges in the Alamo River. Relative to the Baseline, the IIDSS model predicts TSS to decrease slightly (about 5 mg/L) under Alternative 4. Because of the small magnitude of the projected decrease and considering the accuracy of the modeling, this reduction is conservatively considered to represent no impact rather than a potential beneficial effect (No impact).

Impact A4-WQ-4: Decreased selenium concentration in the Alamo River at the Outlet to the Salton Sea. Alternative 4 model results indicate that selenium concentrations would decrease to 6.13 µg/L but would remain above the significance criterion for selenium. Additionally, TSS concentrations decrease to 259 mg/L compared to 264 mg/L under the Baseline but remain above the significance criterion. TDS concentrations decrease to 2,418 mg/L and remain below the significance criterion. In comparison to the Baseline, TDS, TSS and selenium concentrations are all lower (see Table 3.1-15).

The impacts associated with TSS concentrations are similar to those described under the Proposed Project; that is, they generally have a beneficial impact on water quality because

TSS levels are lower relative to the Baseline. Impacts associated with selenium are similar to those described under the Proposed Project in that selenium concentrations in the Alamo River are above the significance criterion. In contrast to the Proposed Project, implementation of Alternative 4 could decrease selenium concentrations. It should be noted that average Baseline selenium concentrations in the Alamo River are also above the significance criterion. (Beneficial impact.)

Impact A4-WQ-5: Maintain selenium concentration in the IID surface drain discharge to the New River. Alternative 4 model results indicate that concentrations of selenium in the IID surface drain discharge to the New River would decrease to 6.50 µg/L, compared to a Baseline of 6.51 µg/L, both of which are above the significance criterion. TDS concentrations in the surface drain discharge to the New River would remain the same at 2,585 mg/L, which is below the significance criterion. TSS concentrations would decrease to 285 mg/L (see Table 3.1-16).

Impacts associated with selenium are similar to those described under the Proposed Project; that is, selenium concentrations in the drains discharging to the New River are above the significance criterion. However, because selenium concentrations decrease minimally compared to the Baseline, the impact is considered to be less than significant. (Less than significant.)

Impact A4-WQ-6: Decrease in COC concentrations in the New River at the Outlet to the Salton Sea. Alternative 4 model results indicate that average concentrations of selenium, TDS, and TSS in the New River at the outlet to the Salton Sea all decrease compared to the Baseline. Selenium and TDS at 3.18 µg/L and 2,606 mg/L, respectively, remain below their respective significance criteria. TSS concentrations decrease to 229 mg/L, which is slightly lower than the Baseline (see Table 3.1-16). Because of the small magnitude of the projected decrease and considering the accuracy of the modeling, the reduction in TSS is conservatively considered to represent no impact rather than a potential beneficial effect. (No impact).

Impact A4-WQ-7: Decrease in selenium concentrations in the IID surface drains discharging directly to the Salton Sea. Model results indicate that under Alternative 4, selenium concentrations in IID surface drain discharge are 4.61 µg/L, which is below the significance criterion. TSS and TDS concentrations are 136 mg/L and 1,815 mg/L, respectively. In comparison to the Baseline, concentrations of TDS, selenium, and TSS are all lower. Because concentrations for all three COCs decline in comparison to the Baseline, the impacts associated with Alternative 4 could be beneficial to water quality in the surface drains that discharge directly to the Sea (see Table 3.1-17). Because of the small magnitude of the projected decrease and considering the accuracy of the modeling, these reductions are conservatively considered to represent no impact rather than a potential beneficial effect. (No impact.)

Impact A4-WQ-8: Potential effects to Imperial Valley groundwater hydrology. Similar to the Proposed Project, Alternative 4 is not expected to impact groundwater resources in the IID. Therefore, impacts to groundwater resources and the beneficial use of groundwater in the IID water service area are expected to be less than significant. (Less than significant impact.)

Salton Sea Habitat Conservation Strategy (HCP-SS)

Under the Salton Sea Portion of the HCP, mitigation water would be provided to the Sea to maintain the salinity of the Sea below 60 ppt until 2030.

As described in Section 2.2.6.7, the Salton Sea Habitat Conservation Strategy has been evaluated in this Final EIR/EIS with the assumption that mitigation water would be generated by fallowing within the IID water service area. Other sources of water could be used but they have not been evaluated in this EIR/EIS.

As described in the Project Description, how mitigation water would be conveyed to the Salton Sea has not yet been specified. Potentially, the mitigation water could be transported via drains and rivers in the Imperial Valley. In this case, flows in the rivers and drains used to convey the water could approach levels under the Baseline. Alternatively, mitigation water could be conveyed to the Salton Sea through channels other than the drains and rivers in the Imperial Valley. In this case, flows in the drains and rivers in the Imperial Valley would be reduced relative to Alternative 4 without implementation of the HCP-SS component. After cessation of provision of mitigation water to the Salton Sea, flows would be the same as without implementation of the Salton Sea Habitat Conservation Strategy.

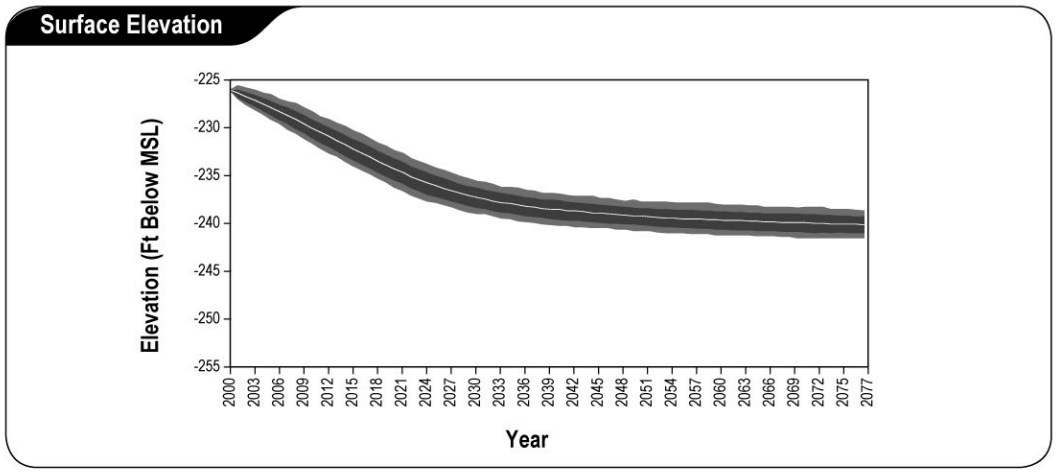
Implementation of the Salton Sea Habitat Conservation Strategy could affect water quality in the drains depending on the source of water used to provide mitigation water. With fallowing within the IID water service area used to generate mitigation water, minor changes in water quality could occur. It is expected that fallowing to generate mitigation water would not change the tail and tile water percentages in the drains, and as a result, water quality would not change appreciably. This expectation was verified by making additional runs with the IIDSS model. Minor changes to water quality concentrations could occur in the New River because about one-third of the flow comes from Mexico, and fallowing would reduce constituent mass loading. In addition, because of smaller flows in the canal system, there could be minor water quality changes in the canals and rivers because of changes in seepage losses and gains.

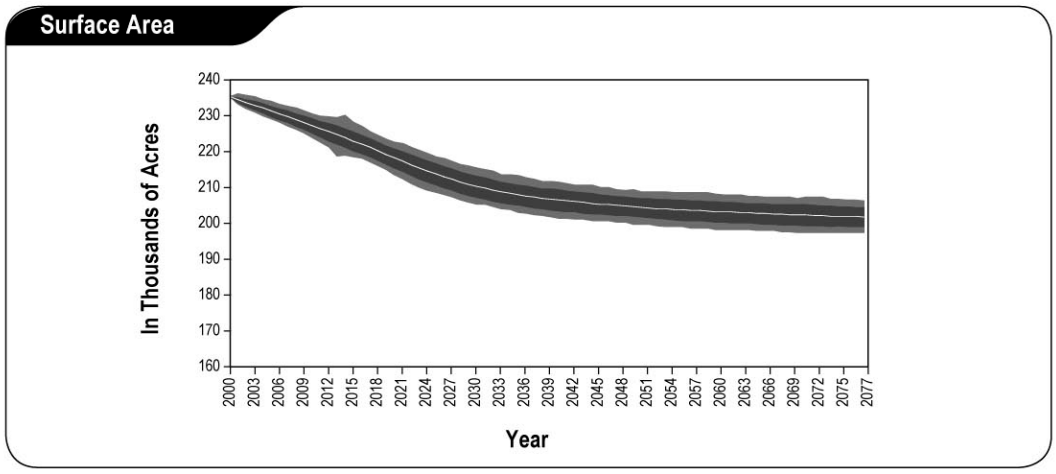
SALTON SEA

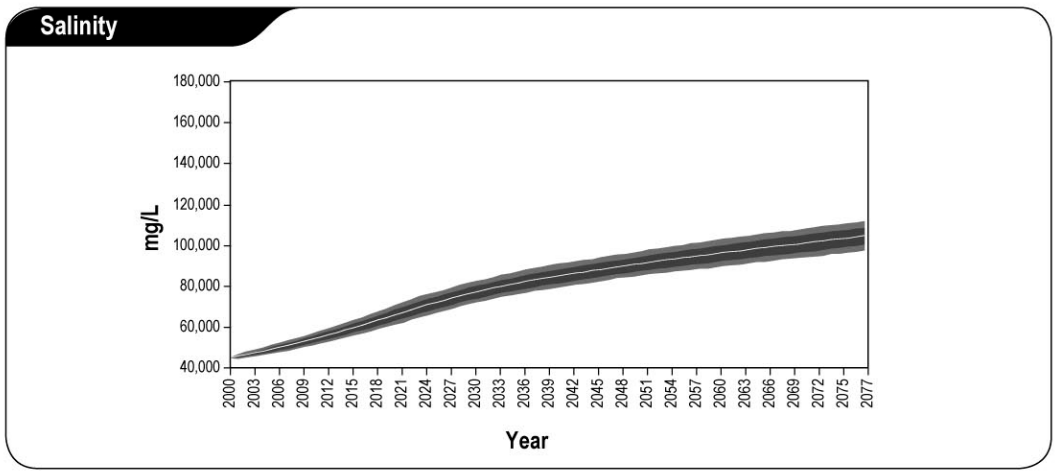
Water Conservation and Transfer

Water Quantity. According to model results generated by the IIDSS (see Appendix F), Alternative 4 is expected to reduce IID's discharge to the Salton Sea by approximately 9 percent, from roughly 1.1 MAFY under the Baseline to approximately 1.0 MAFY (includes flow from Mexico). Modeling conducted by Reclamation indicates that, over a 75-year period, the reduction in flow is expected to result in a drop in the surface of the Sea of roughly 13 feet, from its Baseline elevation of approximately –228 feet msl to –241 feet msl (Salton Sea Accounting Model 2001 data, see Figure 3.1-37).

In addition, Reclamation's model predicts that over the life of Alternative 4, the reduction of flow will reduce the surface area of the Sea by 14 percent (approximately 50 square miles), from the present area of approximately 233,000 acres to 201,000 acres. By far, the greatest reductions are expected to occur between the time of the initiation of transfer and the year 2030 (see Figure 3.1-37). In comparison, under the Baseline the mean elevation of the Sea is expected to drop nearly 8 feet to –235 feet msl over the same 75-year period. However, with







Legend:

Mean

+1 Standard Deviation, -1 Standard Deviation

+95 Percentile, -5 Percentile

Notes:

Mean: Mean of all traces

95 Percentile: 95 percent of all model traces resulted in values less than or equal to the indicated values

5 Percentile: 5 percent of all model traces resulted in values less than or equal to the indicated values

-1 Standard Deviation: Values representing one standard deviation below the mean

+1 Standard Deviation: Values representing one standard deviation above the mean

Source: U.S. Bureau of Reclamation Salton Sea Accounting Model, December 2001.

The data in this figure does not reflect implementation of the Salton Sea Habitat Conservation Strategy

Figure 3.1-37
USBR Model Results:
Alternative 4 Graphs of the Salton Sea

implementation of the Salton Sea Habitat Conservation Strategy in concert with Alternative 4, the elevation of the Sea would be maintained at Baseline elevation to the year 2035 and then reach an elevation of about –240 feet msl at the end of the project term (2077).

See also the additional notes under the Proposed Project impact to the Salton Sea regarding impacts to other resources and relationship to the Salton Sea Restoration Project.

Water Quality. As previously mentioned, a finding of significant impact to the Sea, based on a regulatory standard for TSS and salinity, cannot be made at this time. However, to provide background for potential secondary impacts to biological resources in the Salton Sea, a discussion of the predicted change in salinity of the Sea is presented below.

Further analysis of the impacts that elevated salinity levels could have on the biological resources of the Sea is included in Section 3.2, Biological Resources.

Reclamation's Salton Sea Accounting Model predicts that the reduced inflows under Alternative 4 will ultimately result in the salinity of the Sea rising from its present concentration of approximately 45,000 mg/L TDS to over 60,000 mg/L TDS by the year 2017. And, by the year 2077, the Salton Sea Accounting Model predicts that salinity of the Sea will be just over 103,000 mg/L TDS. In comparison, the Salton Sea Accounting Model results indicate that under future Baseline conditions, the salinity of the Sea will reach 60,000 mg/L TDS by 2023, and ultimately will rise as high as just over 86,000 mg/L TDS by the year 2077 (see Figure 3.1-37). With implementation of the Salton Sea Habitat Conservation Strategy, the predicted TDS level for Alternative 4 is anticipated to be 102,000 mg/L (see Figure 3.1-29a). A bar chart comparing the future Baseline TDS concentration to predicted TDS concentrations for the Proposed Project and Alternatives is presented in Figure 3.1-29.

Impact A4-WQ-9: Potential change in COC concentrations of Salton Sea water column. Similar to the Proposed Project, it is unlikely that Alternative 4 would result in an increase in selenium concentrations in the Sea to levels equal to or greater than the 5.0 µg/L level stipulated in the significance criteria. Additionally, TDS and TSS concentrations would be expected to decrease as flows to the Sea decrease. (Less than significant impact.)

Impact A4-WQ-10: Potential change in COC deposition in Salton Sea sediments. Quantitative data on how reductions in flow affect concentrations of herbicides and pesticides in sediment are not available. However, qualitative assumptions indicate that concentrations of herbicides and pesticides in sediment in the Salton Sea are expected to slightly decrease under Alternative 4.

As discussed in the Existing Setting section (Section 3.1.3.3), herbicides and pesticides tend to concentrate in sediment. Therefore, the amount of TSS in water can be used as a gross indicator for making comparative estimates about herbicide and pesticide concentrations in sediment. In this respect, a reduction in herbicide and pesticide concentrations in sediment under Alternative 4 is expected because the mass input of TSS to the Sea (along with the total inflow of water) is expected to decrease relative to the Baseline. As a result, impacts to sediment quality from Alternative 4 are anticipated to be less than significant. (Less than significant.)

Salton Sea Habitat Conservation Strategy (HCP-SS)

As described in Section 2.2.6.7, the Salton Sea Habitat Conservation Strategy has been evaluated in this Final EIR/EIS with the assumption that mitigation water would be generated by fallowing within the IID water service area. Other sources of water could be used, but they have not been evaluated in this EIR/EIS.

With implementation of the Salton Sea Portion of the HCP, mitigation water would be provided to the Sea such that the salinity of the Sea would remain below 60 ppt until 2030. For approximately the first 30 years of the Project, inflow to the Sea would be greater than under the Baseline. After this period, inflow to the Sea would be reduced. Provision of water to the Sea would maintain the surface elevation higher than would occur under the Baseline until 2030, after which the surface elevation would decline at a faster rate and to a greater degree than under the Baseline (see Figure 3.2-17b in Section 3.2.4.3).

Impact A4-HCP-SS-WQ-11: Reduced loading of COC to Salton Sea water and sediment. The Salton Sea Portion of the HCP is designed to avoid the impacts to biological resources from Project-related reductions in flow to the Sea. The quality of the water discharged to the Salton Sea under the Salton Sea Portion of the HCP would be similar to or improved relative to the water that is currently discharged to the Sea. Therefore, implementing this approach would not affect selenium concentrations in the Sea. Further, providing water to the Sea would slow the rate of salinization relative to the Baseline for the first 30 years of the Project. With the Salton Sea Portion of the HCP, the salinity of the Sea would be lower than under the Baseline until about 2030. Once mitigation water is no longer supplied to the Sea, the salinity is projected to increase beyond that expected under the Baseline (Figure 3.1-29a). There are no significance criteria that stipulate a specific federal or state standard for salinity in the Salton Sea. Thus, the changes in salinity under Alternative 4 with the HCP are a less than significant water quality impact.